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THE TAXONOMIC HISTORY OF CERTAIN SOUTH AND CENTRAL AMERICAN CRICETID RODENTIA: *NEOTOMYS*, WITH REMARKS UPON ITS RELATIONSHIPS; THE COTTON RATS (*SIGMODON* AND *SIGMOMYS*); AND THE "FISH-EATING" RATS (*ICHTHYOMYS, ANOTOMYS, RHEOMYS, NEUSTICOMYS,* AND *DAPTOMYS*)

By G. H. H. Tate

This is the seventh paper of this series. I have purposely left untreated the northern genera *Onychomys, Peromyscus, Reithrodontomys,* and *Neotoma,* and their allies, which have been exhaustively monographed in fairly recent times.

HISTORICAL STATEMENT[1]

NEOTOMYS Thomas

1894. Thomas erected (p. 346) *Neotomys*, n. g., to contain *Neotomys ebriosus*, n. sp., suggesting its nearness to *Sigmodon* and to *Sigmomys alstoni.*

1900. Thomas gave (p. 299) color notes upon *Neotomys ebriosus* from Galera, about fifty miles west southwest of the type locality. The distribution of this animal, which is a form inhabiting the sub-paramo, is probably continuous between the two places.

1905. Trouessart placed (p. 428) *Neotomys* between his *Eligmodontia* and *Reithrodon.*

1921*b*. Thomas described (p. 612) *Neotomys vulturnus*, n. sp. "Altogether the differences do not amount to very much; but, in view of the wide difference in locality, I consider it best for the present to distinguish *vulturnus* as a species rather than subspecies." In the introduction (p. 608) Thomas styled it a "swamp rat."

1926. Thomas again recorded (p. 322) *Neotomys vulturnus.*

[1]A copy of the newly published 'A Manual of Neotropical Sigmodont Rodents,' by Nils Gyldenstolpe (Kungl. Svenska Vetenskapsakad. Handlingar, (3) XI, No. 3, pp. 1–164 and plates, 1932) has just been received. This work should be consulted for each cricetid genus. It reached my hands too late to receive treatment under the generic headings.

NOTE.—When laying out the work for the series of papers which I have nearly completed, I assumed that I should have to deal with *Neotomys* after reaching the akodont division. This idea turned out to be entirely erroneous, for *Neotomys* proves to be the closest known ally, not excepting *Euneomys*, of *Reithrodon*. Accordingly it is treated as a genus apart from others handled in this paper.

That it is a member of the *Phyllotis-Reithrodon* complex is evident from the very large, rounded infra-orbital canal cutting backward between the muzzle and the maxillary root of the zygoma, the narrowed, square-edged interorbital region, and the tendency to bridge over the posterior narial opening through modification of the palatines and of the pterygoid region. I see no evidence of near relationship to *Sigmodon*, as affirmed by Thomas (1894).

Both *Neotomys* and *Reithrodon* are markedly distinct from *Phyllotis* and *Auliscomys* (I have not seen *Euneomys*) in the following characters:

1. Peculiarity of the anterior palatal foramina.
2. Strongly narrowed and furrowed palate.
3. Forward-projecting spinous process of the zygomatic plate.
4. *Cricetus*-like molars.

Notwithstanding the above resemblances, *Neotomys* and *Reithrodon* diverge from one another in the structure of their pterygoid regions and in the fact that the habitus of *Neotomys* is muroid, while that of *Reithrodon* is cuniculoid—indeed the latter parallels *Ochotona* in not a few ways, while the former is *Akodon*-like.

THE COTTON RATS

SIGMODON Say and Ord

Note.—Excepting the type, only forms found south of the Mexican border are dealt with.

1825. Say and Ord described (pp. 352–355) *Sigmodon hispidus*, n. g. and n. sp.

1855. Burmeister described (1854, pp. 15–17) *Lasiomys hirsutus* (n. sp.). See Thomas, 1914.

1855. Baird described (p. 333) *Sigmodon berlandieri*, n. sp., early synonymized with *hispidus* but reinstated by Bailey, 1902, as a subspecies.

1859. Baird wrote (p. 501) a full description of the genus *Sigmodon* and further described (p. 504) *berlandieri*.

1860. DeSaussure proposed (p. 98) *Deilemys*, "1er groupe" of "*Hesperomys* Waterhouse" to contain the single species *H. toltecus* (n. sp.). *Deilemys* was a synonym of *Sigmodon*.

1874. Coues recharacterized (p. 175) the genus *Sigmodon*.

1876. Alston diagnosed (p. 84) the genus *Sigmodon*.

1877. Coues gave (p. 31) a full diagnosis of the genus *Sigmodon*.

1880. Alston, remarking upon *Sigmodon*, which he treated as a full genus, synonymized (p. 152) *toltecus* and *berlandieri* with *hispidus*.

1887. Winge discussed (p. 21) *Holochilus vulpinus* under the generic name *Sigmodon*.

1889. J. A. Allen described (p. 180) *Sigmodon fulviventer*, n. sp.

1891. J. A. Allen listed (p. 186) *berlandieri* as a subspecies of *hispidus*.

1897. Mearns described (p. 504) *Sigmodon hispidus eremicus*, n. subsp.

1897*a*. J. A. Allen described (p. 40) *Sigmodon borucæ*, n. sp.

1897*b*. J. A. Allen described (p. 54) *Sigmodon mascotensis*, n. sp., and (p. 55) *Sigmodon colimæ*, n. sp.

1897*c*. J. A. Allen described (p. 118) *Sigmodon peruanus*, n. sp.

1897*d*. J. A. Allen described (p. 121) *Sigmodon bogotensis*, n. sp.

1898. Bangs described (p. 189) *Sigmodon sanctæmartæ*, n. sp.

1898. Trouessart placed (pp. 522–523) part of *berlandieri* of Allen in the synonymy of *toltecus* and part in that of *colimæ*. He made *berlandieri* Baird a synonym of *hispidus*. *Lasiomys* Burmeister was made (p. 606) a synonym of the echimyid *Isothrix*.

1901. J. A. Allen described (p. 40) *Sigmodon simonsi*, n. sp.

1902. Bangs described (p. 32) *Sigmodon austerulus*, n. sp.

1902. Bailey, in a synopsis of the genus *Sigmodon*, described (from south of the Mexican border) (p. 109) *Sigmodon hispidus tonalensis*, n. subsp.; (p. 109) *S. hispidus major*, n. subsp.; (p. 111) *S. hispidus saturatus*, n. subsp.; (p. 111) *S. hispidus microdon*, n. subsp.; (p. 112) *Sigmodon alleni*, n. sp.; (p. 114) *Sigmodon melanotis*, n. sp.; (p. 115) *Sigmodon leucotis*, n. sp.; (p. 116) *Sigmodon alticola*, n. sp.; and *Sigmodon alticola amoles*, n. subsp.

Berlandieri and *toltecus* were recognized as subspecies of *hispidus*, and *borucæ* and *mascotensis* were reduced to subspecies.

1902. Robinson and Lyon recorded (p. 142) *sanctæmartæ* as far east as San Julian, near La Guaira, Venezuela.

1903. Bangs described (p. 158) *Sigmodon hispidus furvus*, n. subsp.
1903. Elliot described (p. 144) *Sigmodon hispidus inexoratus*, n. subsp.
1903*a*. J. A. Allen described (p. 99) *Sigmodon puna*, n. sp.
1903*b*. J. A. Allen described (p. 601) *Sigmodon baileyi*, n. sp.
1904. J. A. Allen described (p. 68) *Sigmodon borucæ chiriquensis*, n. subsp.
1906. J. A. Allen described (p. 247) *Sigmodon vulcani*, n. sp.
1908. J. A. Allen described (p. 657) *Sigmodon hispidus griseus*, n. subsp.
1913. J. A. Allen described (p. 479) *Sigmodon chonensis*, n. sp.
1914. Thomas stated that "Burmeister's *Lasiomys hirsutus*, from Maracaibo, is clearly a Sigmodon. . . . "
After reading Burmeister's description I agree with Thomas's opinion.
1921*a*. Thomas described (p. 448) *Sigmodon lönnbergi*, n. sp.
1924. Anthony described (p. 3) *Sigmodon inopinatus*, n. sp.
1923. Goodwin described (p. 1) *Sigmodon zanjonensis*, n. sp.

SIGMOMYS Thomas

1880. Thomas described (p. 691) *Reithrodon alstoni*, n. sp. He was doubtful however whether *alstoni* ought to be placed in *Reithrodon*.
1901. Thomas erected (p. 150) *Sigmomys*, n. g., with type *Reithrodon alstoni* Thomas and described *Sigmomys savannarum*, n. sp.
1904. Ameghino proposed (p. 252) *Sigmomys* for a genus of fossil viscacha (preoccupied by *Sigmomys* Thomas, 1901).
1905. Ameghino corrected (p. 75) his name *Sigmomys*, proposed in 1904, to *Eusigmomys*.
1912. Osgood recorded (p. 54) *Sigmomys alstoni* from the Maracaibo region.
1914. Thomas described (p. 412) *Sigmomys venester*, n. sp. He spoke of "*alstoni* from Cumana."

THE "FISH-EATING" RATS

ICHTHYOMYS Thomas

1891. Winge described (p. 20) *Habrothrix hydrobates*, n. sp.
1893*a*. Thomas erected (p. 337) *Ichthyomys*, n. g., with type (p. 339) *Ichthyomys stolzmanni*, n. sp.
1893*b*. Thomas commented on (p. 286) the newly discovered genus *Ichthyomys*.

1896. De Winton described (p. 507) *Ichthyomys söderströmi*, n. sp.
1897. Thomas described (p. 220) *Ichthyomys trichotis*, n. sp.
1921. Anthony described (p. 1) *Ichthyomys tweedyi*, n. sp.
1923. Anthony described (p. 7) *Ichthyomys orientalis*, n. sp.
1924*a*. Thomas described (p. 165) *Ichthyomys nicefori*, n. sp.
1924*b*. Thomas described (p. 541) *Ichthyomys caurinus*, n. sp.
1929. Anthony compared (p. 3) *Ichthyomys* with *Daptomys*, *Anotomys*, *Rheomys*, and *Neusticomys*.

ANOTOMYS Thomas

1906*b*. Thomas erected (p. 86) *Anotomys*, n. g., to contain *Anotomys leander*, n. sp.
1921. Lönnberg remarked upon (p. 37) *Anotomys leander*.
1929. Anthony compared (p. 3) *Anotomys* with *Daptomys*, *Ichthyomys*, *Rheomys*, and *Neusticomys*.

RHEOMYS Thomas

1906*a*. Thomas erected (p. 421) *Rheomys*, n. g., with type *Rheomys underwoodi*, n. sp.
1912. Goldman described (p. 7) *Rheomys raptor*, n. sp.
1928. Dickey described (p. 11) *Rheomys thomasi*, n. sp., and (p. 12) *Rheomys thomasi stirtoni*, n. subsp.
1929. Anthony compared (p. 3) *Rheomys* with *Daptomys*, *Ichthyomys*, *Anotomys*, and *Neusticomys*.

NEUSTICOMYS Anthony

1921. Anthony erected (p. 2) *Neusticomys*, n. g., with type *Neusticomys monticolus*, n. sp. He compared *Neusticomys* with *Ichthyomys*, *Anotomys*, and *Rheomys* (pp. 4–5).
1929. Anthony compared (p. 3) *Neusticomys* with *Daptomys*, *Ichthyomys*, *Anotomys*, and *Rheomys*.

DAPTOMYS Anthony

1929. Anthony erected (p. 1) *Daptomys*, n. g., with type *Daptomys venezuelæ*, n. sp. He compared (p. 3) *Daptomys* with *Ichthyomys*, *Anotomys*, *Rheomys*, and *Neusticomys*.

PRESENT STATUS OF THE GENERA

Genus *Neotomys* Thomas	Type by monotypy: *Neotomys ebriosus* Thomas
Genus *Sigmodon* Say and Ord (=*Deilemys* de Saussure) (=*Lasiomys* Burmeister)	Type by monotypy: *Sigmodon hispidus* Say and Ord

Genus *Sigmomys* Thomas	Type by original designation: *Reithrodon alstoni* Thomas
Genus *Ichthyomys* Thomas	Type by original designation: *Ichthyomys stolzmanni* Thomas
Genus *Anotomys* Thomas	Type by original designation: *Anotomys leander* Thomas
Genus *Rheomys* Thomas	Type by original designation: *Rheomys underwoodi* Thomas
Genus *Neusticomys* Anthony	Type by original designation: *Neusticomys monticolus* Anthony
Genus *Daptomys* Anthony	Type by original designation: *Daptomys venezuelæ* Anthony

List of Named Forms with Type Localities

Neotomys

ebriosus Thomas	Valley of Vitoc, near Chanchamayo, Peru
vulturnus Thomas	Sierra de Zenta, a range . . . along the eastern edge of Dept. of Tilcara, Jujuy, Argentina, 4500 m.

The Cotton Rats

The cotton rats apparently occur in most relatively open, dry regions from the southern United States to the Rio Branco savannas of north Brazil and as far south along the west coast as Trujillo, Peru. They are represented also in isolated areas at high altitudes.

The smooth-toothed cotton rats (*Sigmodon*) appear to be restricted to the north and west of the Andes (including the Andean highlands). On the other hand, the grooved-toothed species (*Sigmomys*) occupy the savannas of Venezuela, Guyana, and north Brazil, and also pass through the gap in the Caribbean Mountains, at Barcelona to the Caribbean coastal strip, along which they extend westward at least as far as Maracaibo (Osgood, 1912). At Mt. Roraima *Sigmomys* reaches an altitude of 4000 feet. The region between Maracaibo and San Julian, near Puerto Cabello (Robinson and Lyon, 1902), apparently constitutes an area of overlap for these two genera.

Sigmodon

Region 1[1] (north of Costa Rica)

a. Mexico

hispidus toltecus (de Saussure)	Mountains of Vera Cruz, Mexico
hispidus berlandieri Baird	"Between San Antonio and El Paso, in northern Mexico" (By Bailey, 1902, given as Rio Nazas, Coahuilla, Mexico)

[1]For full definitions and map of phytogeographic "regions" of Central and South America see Amer. Mus. Novit., No. 579, 1932, pp. 12–14.

hispidus eremicus Mearns	Cienaga Well, 30 miles south of monument No. 204, Mexican boundary line, on the left bank of the Colorado River, in Sonora, Mexico
hispidus inexoratus Elliot	Ocotlan, Jalisco, Mexico
hispidus tonalensis Bailey	Tonala, Chiapas, Mexico
hispidus major Bailey	Sierra de Choix, 50 miles northeast of Choix, Sinaloa, Mexico
hispidus mascotensis Allen	San Sebastian near Mascota, Mexico
hispidus saturatus Bailey	Teapa, Tabasco, Mexico
hispidus microdon Bailey	Puerto Morelos, Yucatan, Mexico
alleni Bailey	San Sebastian, Mascota, Jalisco, Mexico
melanotis Bailey	Patzcuaro, Michoacan, Mexico, 7000 ft.
leucotis Bailey	Valparaiso Mts., Zacaticas, Mexico, 8700 ft.
alticola alticola Bailey	Cerro San Felipe, Oaxaca, Mexico, 10,000 ft.
alticola amoles Bailey	Piñal de Amoles, Queretaro, Mexico, 7000 ft.
colimæ Allen	Colima, State of Colima, Mexico
fulviventer Allen	Zacatecas, Zacatecas, Mexico
vulcani Allen	Volcan de Fuego, Jalisco, Mexico
baileyi Allen	La Cienaga de las Vacas, northwestern Durango, Mexico, 8500 ft.

b.—Guatemala to Costa Rica

Guatemala	
zanjonensis Goodwin	Zanjon, on headwaters of R. Negro, about 70 miles northwest of Guatemala City Guatemala, 9000 ft.
Honduras	
hispidus furvus Bangs	Ceiba, coast of Honduras, sea-level
Nicaragua	
hispidus griseus Allen	Chontales, coastal lowlands, Nicaragua
Costa Rica	
hispidus borucæ Allen	Boruca, Costa Rica

Region 2 (north and west of Andes)

Panama	
hispidus chiriquensis Allen	Boqueron, Chiriqui, Panama
austerulus Bangs	Volcan de Chiriqui, Panama, 10,000 ft.
Colombia	
sanctæmartæ Bangs	Pueblo Viejo, Sierra Nevada de Santa Marta, Colombia, 8000 ft.
bogotensis Allen	Plains (east) ? of Bogotá on east bank of Magdalena River
Venezuela	
hirsutus (Burmeister)	Maracaibo, Venezuela

Region 3 (Andes above 6000 ft.)

inopinatus Anthony	Urbina, slopes of Mt. Chimbarazo, Ecuador, 11,400 ft.

Region 4 (arid coastal strip, southern Ecuador to northern Chile)

chonensis Allen	Chone, Manavi, Ecuador
lönnbergi Thomas	Quevedo, lowlands of western Ecuador, due north of Guayaquil
puna Allen	Puna Island, Ecuador
simonsi Allen	Eten, northern Peru
peruanus Allen	Trujillo, Peru
Sigmomys	
alstoni (Thomas)	"Venezuela." (Cumana. Thomas, 1914)
savannarum Thomas	Savannas, at base of Kanuku Mts., British Guiana
venester Thomas	El Trompillo, near Lake Valencia, N. Venezuela, 1300 ft.

The "Fish-eating" Rats

Ichthyomys	
hydrobates (Winge)	Sierra de Mérida, Venezuela
söderströmi de Winton	Rio Machangara, near Quito, Ecuador
trichotis Thomas	W. Cundinamarca, low country near R. Magdalena, Colombia
stolzmanni Thomas	Chanchamayo, Peru
tweedyi Anthony	Portovelo, Prov. Oro, Ecuador, 2000 ft.
orientalis Anthony	Near R. Napo, eastern Ecuador, 3000 ft.
nicefori Thomas	Paime, north of Bogotá, Colombia
caurinus Thomas	Below Gualea, northeast of Quito, Ecuador, 2000–3000 ft.
Anotomys	
leander Anthony	Mt. Pichincha, near Quito, Ecuador, 11,500 ft.
Rheomys	
underwoodi Thomas	Tres Rios, Costa Rica
raptor Goldman	Head of Rio Limon, Mt. Pirri, eastern Panama 4500 ft.
thomasi thomasi Dickey	Mt. Cacaguatique, Dept. San Miguel, Salvador, 3500 ft.
thomasi stirtoni Dickey	Los Esesmiles, Dept. Chalatenango, Salvador, 8000 ft.
Neusticomys	
monticolus Anthony	Nono Farm, "San Francisco," near Quito, Ecuador
Daptomys	
venezuelæ Anthony	River Neveri, 15 miles west of Cumanacoa, Prov. Sucre, Venezuela

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